

REMARKS

Claim 31 is objected to for an informality.

Claims 16-29, and 31-[33] stand rejected under 35 USC 103 as being unpatentable over McCarty (6015285) in view of Pfefferle (6048194). Claims 34 and 35 stand rejected under 35 USC 103 as being unpatentable over McCarty (6015285) in view of Pfefferle (6048194) in view of Hung (6339925).

Response to Claim Objection

Applicant has changed the dependency for claim 31 so that it now depends from claim 26. Applicant respectfully requests the objection be withdrawn.

Response to 35 USC 103 Rejections

Applicant asserts amended the independent claims to expedite prosecution, but Applicant first asserts that McCarty cannot be modified by Pfefferle as proposed. As Applicant understands, McCarty teaches a combustion catalyst configuration that is a radial flow device. (Column 6, line 44). Applicant understands each catalytic element 10 to be annular and about a common flow channel, and thus a common longitudinal axis. Gas flows radially inward through each catalytic element and into the flow channel, then axially out of the flow channel and into a combustion zone. Since the McCarty flow is radially inward and there is no tangential component to a radial flow, there is no circumferential motion to the gas flow in the flow channel.

Pfefferle teaches a portion 42 of a total flow 40 entering a first flow path (cap 13) in which may be disposed catalytic elements. (Column 3, lines 10-11). The portion 42 is catalytically reacted in the cap 13 and then exits through exits 33 on the side of the cap 13. (The end of the cap 13 is closed. (Column 3, lines 32-33).) Thus, fuel exits the cap 13 in a direction radially *outward* into the flow channel, where it then encounters swirler 50, which imparts a swirl to the pre-reacted fuel. What Pfefferle teaches is a swirler in a flow channel (that is annular for the time it surrounds the centerbody 30), where the swirler swirls a pre-reacted fluid that is moving radially *outward*. The pre-reacted fluid in McCarty is moving radially *inward*. There is no way use the Pfefferle swirler teachings in McCarty to impart a swirling component (i.e. circumferential movement) to the pre-reacted fuel in the McCarty flow channel. Thus, the

proposed combination cannot be made without changing a principle of operation of McCarty, which is impermissible per MPEP 2143.01(VI).

If the above is not found persuasive, Applicant notes that the amended claims introduce limitations that McCarty/Pfefferle does not teach. Specifically, Applicant now claims directing the pre-reacted fuel from the first flow path into the flow channel where the flow channel is an annular flow channel. The flow channel of McCarty into which the pre-reacted fuel is directed is cylindrical, and thus this limitation is not taught. Further, Applicant now claims that the flow is directed such that the flow channel outer wall is effective to impart a circumferential motion to the pre-reacted fuel in the flow channel. The unlabeled inner wall of McCarty that surrounds the flow channel does not impart swirl and cannot be modified to do so without changing the principle of operation of McCarty, which is impermissible per MPEP 2143.01(VI). This limitation remains untaught. Applicant also now claims directing the pre-reacted fuel from the first flow path into the flow channel *along a direction comprising a component tangential* to the first flow path. As noted, the gas flow in McCarty has no tangential component, and thus this limitation is untaught. (It appears that the gas flow in Pfefferle is radially outward, and so Pfefferle doesn't teach this limitation.) Claim 24 has been amended and the arguments used to distinguish claim 16 also apply to claim 24.

Regarding claim 34, Applicant asserts that McCarty/Pfefferle does not teach claim 34 limitations prior to amendment herein. In addition to applicable arguments made above that apply to claim 34, Applicant cannot discern a first *annular* flow channel comprising a first annular outlet and a second *annular* flow channel *concentric with and surrounding* the first annular flow channel. Each catalytic element may constitute a catalytic burner flow channel, and the area surrounding the assembly may be an annular flow channel, but that leaves another annular flow channel untaught. Further, the first outlet is to direct a first flow into the first annular flow channel, but the catalytic elements of McCarty direct flow into a cylindrical flow channel, not an annular flow channel. Applicant has amended the claim for clarity but if the forthcoming arguments are found unpersuasive, Applicant requests a clarification of the rejection of claim 34. Applicant respectfully requests the 35 USC 103 rejection of claims 16-30, and 31-33 be withdrawn.

Applicant has amended claim 34. Applicant changed "surrounded by" to "surrounding" to be consistent in that the second annular flow channel surrounds the first, and not the other way around. Applicant has also included limitations that distinguish claim 34 over McCarty/Pfefferle. Specifically Applicant now claims directing the first flow *tangentially* into the first annular flow channel and the second flow *tangentially* into the second annular flow channel. Further, the vortices created in respective annular flow channels flow about the common longitudinal axis. There is only a single flow channel in McCarty into which pre-reacted gas is directed, and it is cylindrical, not annular, and thus these limitations are untaught. Applicant respectfully requests the 35 USC 103 rejection of claim 34, and dependent claim 35, be withdrawn.

Conclusion

Applicants respectfully request that the Examiner reconsider the objections and rejections and timely pass the application to allowance. All correspondence should continue to be directed to our below-listed address. Please grant any extensions of time required to enter this paper. The commissioner is hereby authorized to charge any appropriate fees due in connection with this paper or credit any overpayments to Deposit Account No. 19-2179.

Respectfully submitted,

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